

## NATIONAL ROUND ROBIN - 7

### TOSS-UP

1. **ERSC; Multiple Choice:** In sedimentary rock formations, what indicates drying after sediment deposition?
- (W) Mud cracks
  - (X) Grooves
  - (Y) Flutes
  - (Z) Geodes

**ANSWER: W-- MUD CRACKS**

### BONUS

1. **ERSC; Multiple Choice:** There are detrital, chemical and organic sedimentary rocks. Of the following, which term is associated with chemical sedimentary rocks?
- (W) Chalk
  - (X) Oolite (pron: oh'-eh-lit)
  - (Y) Coal
  - (Z) Mudstone

**ANSWER: X -- OOLITE**

### TOSS-UP

2. **CHEM; Multiple Choice:** Who discovered that frog legs twitch when brought in contact with a pair of different metals?
- (W) Avogadro
  - (X) Ampere
  - (Y) Galvani
  - (Z) Joule

**ANSWER: Y-- GALVANI**

### BONUS

2. **CHEM; Multiple Choice:** In an electrochemical cell, the connecting tube that contains an electrolyte solution is called a
- (W) half cell.
  - (X) cell.
  - (Y) cathode.
  - (Z) salt bridge.

**ANSWER: Z-- SALT BRIDGE**

**TOSS-UP**

3. **COMP; Multiple Choice:** Which of the following file transfer protocols transfers information in blocks of 1,024 bytes.

(W) Kermit  
(X) X modem  
(Y) Y modem  
(Z) none of the above

**ANSWER: Y-- YMODEM**

**BONUS**

3. **COMP; Multiple Choice:** If an asynchronous modem is running at 9600 bits per second, and it is set to 8 data bits. What is the maximum number of characters that can be transmitted in one second? Assume there are no network delays.

(W) 1200  
(X) 1066  
(Y) 960  
(Z) None of the above

**ANSWER: Y-- 960**

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**TOSS-UP**

4. **BIOL; Multiple Choice:** Allergies result when antigens bind to

(W) mast cells.  
(X) antibody-binding sites.  
(Y) macrophages.  
(Z) plasma cells.

**ANSWER: W-- MAST CELLS**

**BONUS**

4. **BIOL; Multiple Choice:** A person who has had a heart transplant is given cyclosporine to depress

(W) active immunity.  
(X) passive immunity.  
(Y) cell-mediated immune responses.  
(Z) suppressor T-cells.

**ANSWER: Y-- CELL-MEDIATED IMMUNE RESPONSES**

**TOSS-UP**

**5. PHYS; Multiple Choice: In wave motion, a trough is**

- (W) any displacement of particles of the medium.**
- (X) any maximum displacement of particles of the medium.**
- (Y) a maximum displacement downward of particles of the medium.**
- (Z) a maximum displacement upward of particles of the medium.**

**ANSWER: Y– A MAXIMUM DISPLACEMENT DOWNWARD OF PARTICLES OF THE MEDIUM**

**BONUS**

**5. PHYS; Multiple Choice: In a rarefaction, the molecules of the medium are**

- (W) spaced apart.**
- (X) close together.**
- (Y) undisturbed.**
- (Z) spaced the same as in a compression of that medium.**

**ANSWER: W– SPACED APART**

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**TOSS-UP**

**6. GENR; Short Answer: James Lovelock popularized the theory which suggests that the Earth functions as a self-regulating “superorganism.” What is the name of this theory?**

**ANSWER: GAIA (THEORY)**

**BONUS**

**6. GENR; Multiple Choice: Pollination by birds is called**

- (W) autogamy.**
- (X) ornithophily (pron: or-nith-off-ily).**
- (Y) entomophily (pron: ent-eh-mof-illy).**
- (Z) anemophily (pron: an-eh-mof-illy).**

**ANSWER: X– ORNITHOPHILY**

**TOSS-UP**

**7. CHEM; Multiple Choice: The space shuttle uses a kind of hydrogen-oxygen voltaic cell called a**

- (W) dry cell.**
- (X) lead storage battery.**
- (Y) fuel cell.**
- (Z) nicad.**

**ANSWER: Y-- FUEL CELL**

**BONUS**

**7. CHEM; Multiple Choice: A device that produces electricity as the result of redox reactions that can occur on their own is**

- (W) a voltaic cell.**
- (X) an electrolytic cell.**
- (Y) a battery.**
- (Z) an electrochemical cell.**

**ANSWER: W-- A VOLTAIC CELL**

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**TOSS-UP**

**8. ASTR; Multiple Choice: Jupiter's moon Io has a surface that is**

- (W) Covered with active volcanos.**
- (X) Rocky and covered with craters.**
- (Y) Covered with ice similar to a frozen ocean.**
- (Z) Blocked from our view by dense clouds.**

**ANSWER: W-- COVERED WITH ACTIVE VOLCANOS**

**BONUS**

**8. ASTR; Multiple Choice: What celestial body was discovered by the Galileo spacecraft to have markings similar to ice flows in the Earth's polar regions?**

- (W) Europa.**
- (X) Io.**
- (Y) Titan.**
- (Z) Mars.**

**ANSWER: W-- EUROPA**

**TOSS-UP**

**9 BIOL; Multiple Choice: When activated, mast cells release**

- (W) antibodies.
- (X) histamines.
- (Y) interferon.
- (Z) cyclosporine.

**ANSWER: X- HISTAMINES**

**BONUS**

**9 BIOL; Multiple Choice: Asthma is an allergic reaction in which**

- (W) smooth muscles around lung passageways contract.
- (X) suppressor T-cells and helper T-cells die.
- (Y) histamine production decreases.
- (Z) antihistamine production increases.

**ANSWER: W- SMOOTH MUSCLES AROUND LUNG PASSAGEWAYS CONTRACT**

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**TOSS-UP**

**10 MATH; Multiple Choice: Where does the function  $y = 2x^2 + 4$  meet the x axis?**

- (W) -2
- (X) -1
- (Y)  $1/2$
- (Z) none of the above

**ANSWER: Z- NONE OF THE ABOVE**

**BONUS**

**10 MATH; Short Answer: Fresh mushrooms contain 90% water and dried mushrooms contain 10%. How many pounds of dried mushrooms does one get from 27 pounds of fresh ones?**

**ANSWER: 30 (POUNDS)**

**TOSS-UP**

**11. PHYS; Multiple Choice: The photoelectric effect modified**

- (W) violet light theory.
- (X) wave theory.
- (Y) red light.
- (Z) electron production.

**ANSWER: X-- WAVE THEORY**

**BONUS**

**11. PHYS; Multiple Choice: In the photoelectric effect, electrons are knocked out by photons with**

- (W) long wavelengths.
- (X) short wavelengths.
- (Y) low frequencies.
- (Z) low frequencies and short wavelengths.

**ANSWER: X-- SHORT WAVELENGTHS**

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**TOSS-UP**

**12. CHEM; Multiple Choice: Standard state measurements of cell reactions are usually made at what temperature?**

- (W) 0 degrees Kelvin
- (X) 0 degrees Celsius
- (Y) 25 degrees Celsius
- (Z) 100 degrees Celsius

**ANSWER: Y-- 25 DEGREES CELSIUS**

**BONUS**

**12. CHEM; Multiple Choice: Which of the following is found in the paste of an alkaline cell?**

- (W) Ammonium chloride
- (X) Lead dioxide
- (Y) Potassium hydroxide
- (Z) Nickel dioxide

**ANSWER: Y-- POTASSIUM HYDROXIDE**

**TOSS-UP**

**13. COMP; Multiple Choice: Recursion is**

- (W) a term used in software engineering to describe a recurrent data input error from the user.
- (X) a term used in operating systems to describe frequent disk swapping.
- (Y) a term used in programming to describe frequent prompting of the user for input.
- (Z) a term used in programming to describe a self-calling subroutine.

**ANSWER: Z-- A TERM USED IN PROGRAMMING TO DESCRIBE A SELF-CALLING SUBROUTINE**

**BONUS**

**13. COMP; Multiple Choice: The relational data model on which relational databases are made was invented by**

- (W) James Rumbaugh.
- (X) E. F. Codd.
- (Y) Chris J. Date.
- (Z) Mary Loomis.

**ANSWER: X-- E. F. CODD**

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**TOSS-UP**

**14. BIOL; Multiple Choice: The disease that results when the autoimmune system destroys the myelin sheath of nerve fibers is**

- (W) multiple sclerosis.
- (X) rheumatoid arthritis.
- (Y) rheumatic fever.
- (Z) juvenile-onset diabetes.

**ANSWER: W-- MULTIPLE SCLEROSIS**

**BONUS**

**14. BIOL; Multiple Choice: "Strep throat" can be very serious because, if left untreated, it can result in**

- (W) inflammation of the body's joints.
- (X) autoimmune reactions in the pancreas.
- (Y) scarring of the heart valves.
- (Z) the destruction of myelin sheaths of nerves.

**ANSWER: Y-- SCARRING OF THE HEART VALVES**

**TOSS-UP**

**15. ASTR; Multiple Choice: The length of a day on Mars is**

- (W) 16 hours 27 minutes.**
- (X) 24 hours 37 minutes.**
- (Y) 31 hours 13 minutes.**
- (Z) 37 hours 19 minutes.**

**ANSWER: X-- 24 HOURS 37 MINUTES**

**BONUS**

**15. ASTR; Multiple Choice: The designation ALH 84001 refers to**

- (W) A meteorite from Mars.**
- (X) An unusual rock formation analyzed by the Sojourner Mars rover.**
- (Y) An earth crossing asteroid discovered in 1984.**
- (Z) One of the recently discovered objects in the Kuiper [pron. KYE-per] belt.**

**ANSWER: W-- A METEORITE FROM MARS**

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**TOSS-UP**

**16. PHYS; Multiple Choice: All waves**

- (W) are both transverse and longitudinal.**
- (X) transfer energy through a medium.**
- (Y) move at right angles to the medium.**
- (Z) move parallel to the medium.**

**ANSWER: X-- TRANSFER ENERGY THROUGH A MEDIUM**

**BONUS**

**16. PHYS; Multiple Choice: The energy of a wave is directly proportional to its**

- (W) speed.**
- (X) wavelength.**
- (Y) amplitude.**
- (Z) frequency.**

**ANSWER: Z-- FREQUENCY**



**TOSS-UP**

**17. CHEM; Multiple Choice: A species readily reduced has a**

- (W) negative standard reduction potential.**
- (X) positive standard reduction potential.**
- (Y) positive standard oxidation potential.**
- (Z) standard reduction potential of zero.**

**ANSWER: X– POSITIVE STANDARD REDUCTION POTENTIAL**

**BONUS**

**17. CHEM; Multiple Choice: All devices that use electrical energy to drive redox reactions that do not occur on their own are called**

- (W) voltaic cells.**
- (X) electrolytic cells.**
- (Y) batteries.**
- (Z) electrochemical cells.**

**ANSWER: Y– ELECTROLYTIC CELLS**

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**TOSS-UP**

**18. ERSC; Multiple Choice: Which term is used to describe a fault when the hanging wall moves upward in relation to the foot wall?**

- (W) Thrust fault**
- (X) Normal fault**
- (Y) Strike-slip fault**
- (Z) Transformation fault**

**ANSWER: W– THRUST FAULT**

**BONUS**

**18. ERSC; Multiple Choice: A confined aquifer is said to exist under flowing artesian conditions when its potentiometric surface is**

- (W) equal to the overlying unconfined aquifer's water table.**
- (X) equivalent to the top of the confining layer.**
- (Y) higher than the ground surface.**
- (Z) lower than the top of the confining layer.**

**ANSWER: Y– HIGHER THAN THE GROUND SURFACE**

**TOSS-UP**

19. **GENR; Multiple Choice:** Who was the marine biologist and author of *Silent Spring* who was one of the first people to warn of the dangers of pesticides like DDT?

(W) Jacques Cousteau  
(X) Rachel Carson  
(Y) Charles Darwin  
(Z) Marlin Perkins

**ANSWER: X-- RACHEL CARSON**

**BONUS**

19. **GENR; Multiple Choice:** A type of plastic that is biodegradable has been in the news lately. The ingredient that makes it biodegradable is

(W) vegetable oil.  
(X) petroleum.  
(Y) cornstarch.  
(Z) leather.

**ANSWER: Y-- CORNSTARCH**

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**TOSS-UP**

20. **PHYS; Multiple Choice:** For waves, lambda is the symbol for

(W) wavelength.  
(X) frequency.  
(Y) amplitude.  
(Z) cycles.

**ANSWER: W-- WAVELENGTH**

**BONUS**

20. **PHYS; Multiple Choice:** The bending of waves around the edge of a barrier that results in a new series of waves is called

(W) refraction.  
(X) reflection.  
(Y) diffraction.  
(Z) interference.

**ANSWER: Y-- DIFFRACTION**

**TOSS-UP**

**21. BIOL; Short Answer: What is the largest gland in the body?**

**ANSWER: LIVER**

**BONUS**

**21. BIOL; Multiple Choice: Tobacco smoke contains carbon monoxide that**

- (W) releases epinephrine.**
- (X) blocks oxygen transport.**
- (Y) increases pulse rate.**
- (Z) blocks epinephrine.**

**ANSWER: X-- BLOCKS OXYGEN TRANSPORT**

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**TOSS-UP**

**22. CHEM; Short Answer: What is Standard Temperature and Pressure (STP)?**

**ANSWER: 0 DEGREES CELSIUS AND 1 ATMOSPHERE (ACCEPT 273 DEGREES KELVIN)**

**BONUS**

**22. CHEM; Multiple Choice: Chemical kinetics is mainly concerned with**

- (W) reaction rate.**
- (X) heat of reaction.**
- (Y) equilibrium.**
- (Z) completeness of reaction.**

**ANSWER: W-- REACTION RATE**

**TOSS-UP**

- 23. PHYS; Short Answer: How many quarks make up a neutron?**

**ANSWER: 3**

**BONUS**

- 23. PHYS; Multiple Choice: The most efficient transmission of sound is through**

**(W) liquids.  
(X) solids.  
(Y) gases.  
(Z) vacuums.**

**ANSWER: X-- SOLIDS**

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**TOSS-UP**

- 24. MATH; Short Answer: What is the area of a trapezoid, in square meters, that has a height of 4 meters and parallel sides of length 3 and 4 meters?**

**ANSWER: 14 (SQUARE METERS)**

**BONUS**

- 24. MATH; Multiple Choice: If a matrix multiplied by a vector gives a scalar multiple of that vector, the scalar multiple is called**

**(W) a determinant.  
(X) an inverse.  
(Y) an eigenvalue.  
(Z) a projection.**

**ANSWER: Y-- AN EIGENVALUE**

**TOSS-UP**

- 25. BIOL; Short Answer: Which vitamin is known as the “coagulation vitamin” because of the vital role it plays in blood clotting?**

**ANSWER: K**

**BONUS**

- 25. BIOL; Short Answer: The liver uses Vitamin K to produce what material that is essential to blood clotting?**

**ANSWER: PROTHROMBIN**